<u>REMARKS</u>

In the Office Communication mailed January 6, 2009 as entered in the above-captioned matter, claims 1-8 and 11 have been rejected under 35 U.S.C. § 103(a). Claims 19, 22, 23, 28, and 29 are allowed (and the applicants thank the Examiner for this continued indication of allowable subject matter). The Applicants respectfully traverse these rejections and request reconsideration.

<u>*Rejections Under 35 U.S.C. § 103*</u>

Claims 1-2 and 11 have been rejected under 35 U.S.C. § 103(a) given Raleigh et al. (U.S. Patent No. 6,888,899) ("Raleigh") in view of Vila et al. (U.S. Patent No. 6,757,348) ("Vila"). The Examiner acknowledges that Raleigh is silent with respect to disclosing when adjacent bits are assigned to different transmitters and different subcarriers and relies upon Vila for this content. Prior to reviewing the merits of this approach, however, the applicant believes it will be helpful to first briefly address other characterizations of Raleigh that the Examiner appears to have made in error.

First, the Examiner relies upon Column 35, line 48 of Raleigh for the claim 1 recitation relating to providing "interleaved bits wherein datastream bits are assigned to differing transmitters and differing subcarriers with low channel response correlation."[1] The applicant respectfully observes, however, that it is error to interpret Raleigh in this way. Claim 1 speaks to transmission and hence to "transmitters." This cited portion of Raleigh, by way of direct contrast, speaks of the "receiver." More particularly, at Column 35, line 48 Raleigh notes that "we assume that the noise at the output of each receiver antenna path is additive thermal noise, and therefore that the additive noise is uncorrelated between any two antenna outputs . . . ." There, it is respectfully observed that Raleigh is speaking of not only receivers rather than transmitters, but of correlation having to do with noise rather than channel response correlation

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[1] *Office Communication* dated January 6, 2009 at page 3, lines 4-7.

as pertains to datastream bits. Accordingly, the applicant respectfully submits that the Examiner's reliance upon Raleigh in these regards is misplaced.

Somewhat similarly, the Examiner also relies upon Column 18, lines 16-17 of Raleigh for claim 1's recitation regarding exploiting an increased amount of spatial and frequency diversity with respect to the described transmission activity. The cited portion of Raleigh, however, clearly pertains to spatial processing at a "receiver" in order to favor "received power." Accordingly, the Examiner's reliance upon Raleigh for the stated purpose again appears inappropriately placed.

Notwithstanding the foregoing points, the applicant has amended claim 1 to provide additional detail with respect to the applicant's particular approach to data transmission. In particular, claim 1 now makes specific reference to both bits and "symbols."[2] A symbol, of course, typically represents 2 or more bits.[3] For example, a QPSK symbol represents 2 bits while a 16QAM symbol represents 4 bits. As claim 1 now acknowledges, it is "symbols" that are ultimately transmitted by the referred-to transmitters. But as claim 1 now also sets forth, the various bits which are represented by these symbols are "grouped and mapped to symbols and the symbols assigned for transmission such that adjacent datastream bits are assigned to differing transmitters and differing subcarriers with low channel response correlation to thereby exploit an increased amount of spatial and frequency diversity."

This is an arrangement that is neither disclosed by, nor even hinted at, by the prior art references of record. Note in particular that merely interleaving symbols will alone not assure such a result.

To demonstrate this point with a simple example, consider a stream of 20 bits (denoted here for convenience as b1-b20) that are consecutively grouped, two at a time in this example, to each of 10 corresponding QPSK symbols (denoted here for convenience as S1-S10). As the following table demonstrates, even though adjacent *symbols* are sent on differing transmitters

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[2] The specification supports these changes. See, for example, paragraphs 0026 and 0027.
[3] As one exception to this, a BPSK symbol corresponds to a single bit.

and subcarriers, adjacent *bits* easily end up being assigned to a shared transmitter and even a shared subcarrier regardless of a fairly jumbled approach to symbol interleaving.

	Subcarrier #1	Subcarrier #2	Subcarrier #3	Subcarrier #4	Subcarrier #5
Transmitter #1	S1 = b1,b2	S7 = b13,b14	S3 = b5,b6	S9 = b17,b18	S5 = b9,b10
Transmitter #2	S6 = b11,b12	S2 = b3,b4	S8 = b15,b16	S4 = b7,b8	S10 = b19,b20

Note that in this simple example every single subcarrier includes a pair of adjacent bits and every transmitter includes five pairs of adjacent bits.

The applicant proposes and claims something quite different and not staightforward. By way of illustration, and to begin with the same starting point as was used in the example above, the bits of the datastream can be assigned to the symbols to result instead in the table presented below.

	Subcarrier #1	Subcarrier #2	Subcarrier #3	Subcarrier #4	Subcarrier #5
Transmitter #1	S1 = b1,b11	S7 = b7,b17	S3 = b3,b13	S9 = b9,b19	S5 = b5,b15
Transmitter #2	S6 = b6,b16	S2 = b2,b12	S8 = b8,b18	S4 = b4,b14	S10 = b10,b20

Here, one can readily see that no subcarrier, and no transmitter, includes any bit that is adjacent to another bit. It is this kind of result that one derives from claim 1's requirement that "consecutive interleaved bits are grouped and mapped to symbols and the symbols assigned for transmission such that_adjacent datastream bits are assigned to differing transmitters and differing subcarriers with low channel response correlation to thereby exploit an increased amount of spatial and frequency diversity."

As none of the cited prior art references offers any hint of such an approach or result, no fair combination of these references with one another can reasonably yield the recitations of claim 1. The applicant therefore respectfully submits that claim 1 is clearly allowable over the references of record.

Claims 2-8 and 11

Claims 2-8 and 11 are ultimately dependent upon claim 1, which claim has been shown allowable above. While the Applicants believe that other arguments are available to highlight the allowable subject matter presented in various of these dependent claims, the Applicants also believe that the comments set forth herein regarding allowability of the independent claims are sufficiently compelling to warrant present exclusion of such additional points for the sake of brevity.

Conclusion

There being no other objections to or rejections of the claims, the Applicants respectfully submit that claims 1-8, 11, 19, 22, 23, 28, and 29 are allowable over the references of record and may be passed to allowance.

The Commissioner is hereby authorized to charge any additional fees which may be required with respect to this communication, or credit any overpayment, to Deposit Account No. 06-1135.

Respectfully submitted,

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